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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/747,852

12/29/2003

Jaroslav J. Sydir

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03/19/2008

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EXAMINER

ZHE, MENG YAO

ART UNIT

PAPER NUMBER

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/747,852	SYDIR ET AL.	
	Examiner	Art Unit	
	MengYao Zhe	2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

**Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date
:8/22/07,6/05/07,3/08/07,6/10/04.**

DETAILED ACTION

1. Claims 1-26 are presented for examination.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-14, 25-26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- A. The following claim languages are unclear and indefinite:

- i) Claim 1, line 4, it is uncertain what is meant by "same context command FIFOs" <i.e. does it mean that all commands in the FIFO belong to one application or task such that memory access is localized?>.

It is uncertain how the "command FIFO" of line 2, "a scheduler" of line 6, and "a plurality of same context command FIFOs" are related <i.e. are they connected so that the scheduler receives commands from command FIFO and then distributes the commands to the same context command FIFOs?> Furthermore, it is unclear how "same context command FIFOs" of line 4 are related to "a command FIFO" of line 2 <i.e. are the same context command FIFOs replicas of the command FIFO?>

Claims 7, 9, 12 have the same deficiencies as claim 1 above.

- ii) Claim 25, line 7, it is uncertain what is meant by "same context command FIFOs" <i.e. does it mean that all commands in the FIFO belong to one application or task such that memory access is localized?>.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-6, 15-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kimmel et al., Patnet No. 6,105,053 (hereafter Kimmel) in view of Sihlbom et al., Pub No. 2002/0188885 (hereafter Sihlbom).
6. As per claims 1, Kimmel teaches a multi-processor network system comprising:
- a command queue to store one or more commands (Column 2, lines 2-21: the queue for the root node corresponds to a command queue);
- a plurality of cores (Column 2, lines 2-7);

a like plurality of same context command queues, each of said plurality of same context command queues coupled to a corresponding one of said first plurality of cores (Column 2, lines 2-21; Column 9, lines 29-38);

a scheduler coupled to said command FIFO and to each of said first plurality of cores in said core group (Column 9, lines 56-63; Column 10, lines 34-53).

Kimmel does not specify that the multi-processor system is all contained in one processor, and that multiple cores are embedded on this processor. Furthermore, Kimmel does not specify that each command queue may be a FIFO queue.

However, Sihlbom teaches that the multi-processor system is all contained in one processor, and that multiple cores are embedded on this processor (Abstract, lines 1-2) and each command queue may be a FIFO queue (Para 20) for the purpose of building an optimized processing device.

It would have been obvious to one having ordinary skill in the art to modify the teachings of Kimmel of having a multi-processing system with multiple processors, each with its own queue, with a single processor having a plurality of cores and a FIFO, as taught by Sihlbom, in order to have a single processor having a plurality of cores, each having its own FIFO queue, because it allows for an optimized processing device.

7. As per claim 2, Kimmel teaches wherein said plurality of cores corresponds to a first plurality of cores in a first core group and a plurality of core groups, each of said core groups coupled to the command queue (Column 2, lines 2-21; Figs 1, 2).

8. As per claims 3, Kimmel teaches wherein said plurality of cores corresponds to a first plurality of cores in a first core group and the network processor further comprises: a plurality of core groups; and said command queue corresponds to a first one of a plurality of command queues, each of said plurality of command queues coupled to a corresponding one of said plurality of core groups (Column 2, lines 2-21; Figs 1, 2).

9. As per claim 4, Kimmel teaches wherein said plurality of same context command queues is provided such that each of the cores in said plurality of core groups is coupled to a corresponding one of said plurality of same-context-command queues (Column 1, lines 60-65; Column 2, lines 15-21; Column 7, lines 23-25; Column 10, lines 25-34).

10. As per claim 5, Kimmel teaches wherein said scheduler is adapted to receive a command from said command queue and to assign the command to one of said plurality of cores (Column 10, lines 34-49).

11. As per claim 6, Kmmel teaches wherein said scheduler is adapted to receive a command from said command queue and to determine which of said plurality of cores is processing a command and in response to one of said plurality of cores in said core group processing a command, to determine if the command received from said command queue is in the same context as the command being processed by said core (Column 2, lines 15-21; Column 10, lines 34-49).

12. As per claims 15, 19, Kimmel teaches a method comprising: receiving a command in a command queue; determining whether one of a plurality of cores is idle; assigning the command to the idle one of the plurality of cores (Column 10, lines 50-Column 11, lines 12).

Kimmel does not teach that the command queue is a FIFO queue.

However, Sihlbom teaches a command queue may be a FIFO queue (Para 20) for the purpose of building an optimized processing device.

It would have been obvious to one having ordinary skill in the art to modify the teachings of Kimmel with a FIFO queue, as taught by Sihlbom, because it allows for an optimized processing device.

13. As per claims 16, 20, 21, Kimmel teaches in response to all of the cores in the core group being idle, assigning the command in the command queue to a first pre-selected one of the plurality of cores; in response to not all of the plurality of cores being idle, determining whether the context of the command in the command queue is the same as the context of the command currently being processed by one of the plurality of cores which is not idle (Column 10, lines 50-Column 11, lines 12).

14. As per claim 17, Kimmel teaches in response to the contexts being the same, moving the command from the command queue to a same context command buffer associated with the core which is currently processing the command in the same context (Column 11, lines 7-12).

15. As per claim 18, Kimmel teaches in response to the context of the command in the command buffer not being the same as the context of the command being processed by the core, assigning the command in the command queue to a first one of the plurality of cores which is idle (Column 10, lines 60-Column 11, line 5).

16. As per claim 22, Kimmel teaches in response to not all of the cores in the core group being idle, determining whether the context of the command in the command

FIFO is the same as the context of any command currently being processed by one of the cores which is not idle (Column 11, lines 5-12).

17. As per claims 23, 25, 26, Kimmel teaches in response to the contexts being the same, moving the command from the command FIFO to a same context command FIFO of the core which is currently processing the command (Column 11, lines 5-12).

18. As per claim 24, Kimmel teaches in response to the context of the command in the command FIFO not being the same as the context of any command being processed by a core, assigning the command in the command FIFO to a first one of the plurality of cores which is idle (Column 10, line 50-Column 11, line 12).

19. Claims 7-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kimmel et al., Patent No. 6,105,053 (hereafter Kimmel) in view of Yung, Patent No. 5,592,679 (hereafter Yung), further in view of Sihlbom et al., Pub No. 2002/0188885 (hereafter Sihlbom).

20. As per claims 7, 8, 9, 12, 13, Kimmel teaches a multi-processor system comprising: (a) a plurality of cryptographic acceleration units (Fig 1A, units 10, 11), each of said plurality of cryptographic acceleration units comprising: (1) a command queue to

store one or more commands (Column 2, lines 12-14); (2) a plurality of processors (units 1, 2); (3) a like plurality of same-context command queues, each of said plurality of same context command queues coupled to a corresponding one of said first plurality of processors (Column 2, lines 12-14); an interface, adapted to couple the first node to another node (Fig 1A, units 12, 16).

Kimmel further teaches a medium term scheduler that governs and monitors all nodes in a hierarchy of processors. As of result, Kimmel does not teach multiple schedulers, where each unit has its own scheduler, since the medium term scheduler is able to schedule across all units. More specifically, Kimmel does not specify for multiple schedulers, where each scheduler is coupled to said command queue and to each of said first plurality of processors in said processor group.

However, Yung teaches multiple schedulers, each coupled to each of said first plurality of execution units in said execution unit group (Fig 2, units 241 and 241b; Column 5, lines 49-56) for the purpose of having a local scheduler for each execution units.

It would have been obvious to one having ordinary skill in the art at the time of the applicant's invention to modify the teachings of Kimmel, where a single scheduler is distributed across multiple units so that it act as a scheduler for each unit of processors with multiple schedulers, each coupled to each of said first plurality of execution units in said execution unit group, as taught by Yung, so that each scheduler is coupled to a processor group for the purpose of having a local scheduler for each execution units.

Kimmel in view of Yung does not specify that the multi-processor system is all contained in one processor, and that multiple cores are embedded on this processor. Furthermore, Kimmel in view of Yung does not specify that each command queue may be a FIFO queue.

However, Sihlbom teaches that the multi-processor system is all contained in one processor, and that multiple cores are embedded on this processor (Abstract, lines 1-2) and each command queue may be a FIFO queue (Para 20) for the purpose of building an optimized processing device.

It would have been obvious to one having ordinary skill in the art to modify the teachings of Kimmel in view of Yung of having a multi-processing system with multiple processors, each with its own queue, with a single processor having a plurality of cores and a FIFO, as taught by Sihlbom, in order to have a single processor having a plurality of cores, each having its own FIFO queue, because it allows for an optimized processing device.

21. As per claim 10, Kimmel teaches a global queue having an input adapted to receive commands directed toward at least one of said plurality of cryptographic acceleration units and having an output; and a global scheduler having an input coupled to the output of said global queue and having an output adapted to provide a data path to each of said plurality of cryptographic acceleration units (Column 10, lines 34-55). Yung also teaches a global queue (Column 5, lines 29-43).

22. As per claims 11, 14, Kimmel teaches wherein said plurality of processors form a first processor group and wherein the processor further comprises a plurality of processor groups, each of plurality of core groups coupled to said global scheduler (Fig 1A, Column 5, lines 29-43).

Conclusion

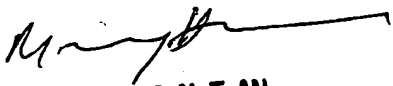
23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MengYao Zhe whose telephone number is 571-272-6946. The examiner can normally be reached on Monday Through Friday, 7:30 - 5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached at 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO

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Customer Service Representative or access to the automated information system, call
800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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